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Mohamed Ben Rejeb[1,2]*, Dhekra Chebil[1], Latifa Merzougui[1,2], Balsem Kacem[3], Selwa Khefacha-Aissa[1], Lamine Dhidah[1,2] and Houyem Said-Laatiri[1,2]

[1]Department of Prevention and Care Safety, Sahloul Hospital, Sousse, Tunisia
[2]Department of Community and Preventive Medicine, Faculty of Medicine of Sousse, University of Sousse, Tunisia
[3]Department of Pharmacy, Sahloul Hospital, Sousse, Tunisia

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***Corresponding author:** Mohamed Ben Rejeb, Department of Prevention and Care Safety, Sahloul Hospital, Sousse, Tunisia, Tel: +216 54 098 709; Fax: +216 73 367 451;
E-mail: mohamed_benrejeb@yahoo.fr

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Research Article

Patient Safety Culture in a Tunisian Teaching Tertiary Care Hospital

Abstract

Objectives: Our study aimed to investigate patient safety attitudes and perceptions amongst health care providers in Tunisian tertiary care hospitals.

Methods: This cross-sectional study was conducted during April May and June 2015 in Sahloul University hospital in Sousse: a 630-beds tertiary hospital in Eastern Tunisia. This survey included 344 cares providers. The French version of the Hospital Survey on Patient Safety Culture questionnaire was used to identify dimensions of patient safety culture.

Results: Areas with potential for improvement were overall perception of security, Teamwork within units, organizational learning/continuous improvement, open communication and underreporting of events. Teamwork across hospital units had the lowest score. No significant differences between physicians and nurses were found for all composites in our study.

Conclusion: Patient safety culture remains underdeveloped in our hospital. Leaders must implement a development strategy by creating the culture and commitment needed to identify and solve underlying systemic causes related to patient safety.

Introduction

In developed countries patient safety is now recognized as a top priority in their healthcare systems [1]. Patient safety aims to protect patients against care-associated adverse events (AEs). They are defined as unintended injuries or complications caused by health care management, rather than by the patient's underlying disease and that lead to death, disability at the time of discharge or prolonged hospital stay [2]. While, 35 to 70% of AEs have been judged to be preventable [3-5], they appear to be responsible for 44,000 to 98,000 accidental deaths and over one million excess injuries each year [6,7]. The situation is thought to be more challenging in developing countries with higher risk of patient harm due to the limitation of resources and lack of adequate infrastructures [8].

One aspect of patient safety that has been increasingly of interest is the "culture" of safety. Patient safety culture is defined as the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organization's safety management [9]. A positive patient safety culture guides the behaviours of healthcare professionals towards viewing patient safety as one of their highest priorities [9]. Safety culture assessment surveys allow hospitals to identify the strengths and weaknesses of their safety culture [10]. Literature review showed that quantitative methods using individual self-administered questionnaires were the most common [9]. Among these questionnaires, The Hospital Survey on Patient Safety Culture (HSOPS) of the Agency of Healthcare Research and Quality (AHRQ) is the most used tool to assess safety culture [11].

In Tunisia, awareness of patient safety seems to be delayed by contribution to developed countries. Few studies were conducted to examine the prevalence of AEs and assess safety culture in Tunisian hospitals [12-14]. In this context, our study aimed to investigate patient safety attitudes amongst health care providers in Tunisian tertiary care hospital and help us to implement a process to improve care quality and patient safety.

Materials and Methods

Design and setting

We carried out a cross-sectional study during April May and June 2015 in Sahloul University hospital in Sousse: a 630-beds tertiary hospital in Eastern Tunisia. The number of admissions and the total number of hospitalization-days were respectively 28 079 and 199 497 in 2015.

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Sample

All medical and paramedical staff that providing patient care and working in inpatient services of Sahloul hospital at least one month were included: senior physicians, assistant physicians, residents, nurses, technicians and nurse anesthetists. We exclude the caregivers and workers. Regarding physicians, we decided to collect information from all eligible and included physicians (n = 174). From 994 paramedical staff (669 nurses and 325 technicians), we proceeded by single elementary and random sampling to select participants. The sample size was determined based on a formula that allows for an expected prevalence of positive global perception of patient safety estimated at 23%, with the power of 0.8 at 95% confidence level. The required sample of paramedical personnel size was determined 283.

Survey instrument

We used the French version of HSOPSC for data collection [15]. HSOPSC has been tested on a large sample in United States, and has good supporting documentation [16-18]. HSOPSC has good psychometric criteria testing, including item analysis, exploratory factor analysis, confirmatory factor analysis, and inter-correlation and reliability analysis [16,17,19,20]. It also has been used and validated in different countries [20-24]. The French version of HSOPSC displays the perceptions of patient safety climate in 10 factors or dimensions (Table 1). The patient safety climate factors contain between three and six items each (a total of 40 items) and are all measured on a Likert scale, with a score from 1 to 5 on level of agreement: strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5).

Data collection

We distributed a paper-based questionnaire to the selected participants. They could freely and anonymously fill in the questionnaire and return their responses directly to the investigator.

Statistics analyze

Demographic data and the scores of patient safety culture dimensions were summarized using descriptive statistics. For each positively worded item, the percentage of positive responses was calculated–that is, the percentage of respondents answering the question by checking "strongly agree" and "agree" or "always" and "most of the time". The scores of negatively worded items were reversed to ensure that higher scores always reflect more positive responses. Finally, a score was calculated for each dimension. It corresponds to the average proportions of positive responses per item. If the average was 75% or more, the dimension was developed. If it is between 50 % and 74%, the dimension needs to be improved. If it is under 50%, the dimension is non-developed. To compare the dimensions' scores between physicians and paramedical personnel, the chi-square test was used, and $p < 0.05$ was recognized as statistically significant. All statistical analyses were carried out using SPSS Version 19 software.

Ethics

The study was approved by the ethics committee of Sahloul hospital. Verbal consent of the participants was obtained before administering the questionnaires.

Results

The overall HSOPSC response rate was 73.0% (344 out of 457 questionnaires) and, for each profession: physicians 63% (110/174) and nurses 82% (234/283). The mean age of participants was 37.2 ± 8.7 years. Of them, 47.7% were male and 52.3% female. While 197 (57.3%) of them were working in medical units and 147 (42.7%) were working in Surgical ones. Respondents reported having over than 10 years of experience at the hospital (31.1%). Table 2 lists the sample's characteristics.

The percent of average positive responses (agree, strongly agree) varied between 43.3% and 59.4% across the ten patient safety dimensions of the HSOPSC (Figure 1). The highest percentage of positive responses was obtained from the "Frequency of events reported", whereas items in the "Teamwork across units" dimension received the lowest percent of positive responses (Table 3). Areas with potential

Table1: Patient safety culture dimensions of the HSOPSC used at Sahloul hospital Sousse (Tunisia)

Patient safety dimensions of the HSOPSC	Items
Overall perception of safety	4
Frequency of events reported	3
Supervisor or manager expectations and actions promoting patient safety	4
Teamwork within units	4
Teamwork across hospital units	6
Staffing	3
Communication openness	3
Non-punitive response to error	3
Hospital management support for patient safety	4
Organizational learning - continuous improvement	6
Total	**40**

Table2: Characteristics of 344 respondents to the HSOPSC in Sahloul hospital Sousse (Tunisia)

Characteristics	Category	n	(%)
Profession	Seniors physicians	66	19.2
	Resident physicians	44	12.8
	Paramedical	234	68
Work unit	Medical	197	57.3
	Surgical	147	42.7
Years in profession at hospital	< 1 years	24	7
	1-5 years	128	37.2
	6-10 years	85	24.7
	> 10 years	107	31.1
Age	< 35 years	177	51.5
	35-44 years	116	33.7
	45-54 years	45	13.1
	55-65 years	6	1.7
Sex	Male	164	47.7
	Female	180	52.3

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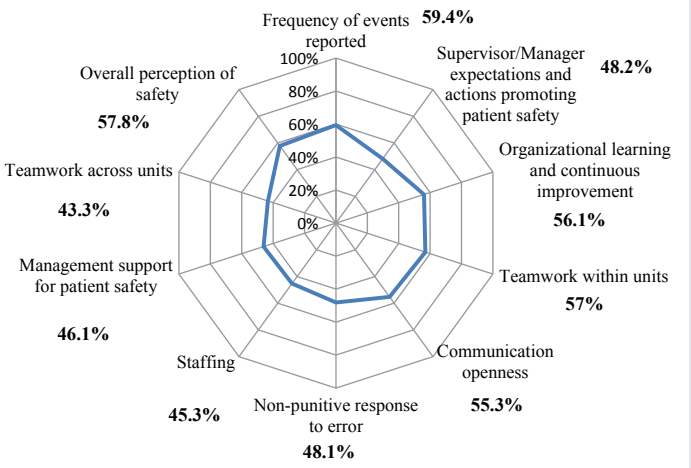

Figure 1: Average positive perceptions of healthcare workers towards HSOPSC dimensions in Sahloul hospital Sousse (Tunisia).

Table 3: Average positive responses to patient safety culture items and dimensions of HSOPSC in Sahloul hospital Sousse (Tunisia)

Composites and survey items	Average percentage of positive response
Overall perception of safety	**57.8**
It is just by chance that more serious mistakes do not happen around here	50.8
Patient safety is never sacrificed to get more work done	60.4
We have patient safety problems in this unit (R)	46.8
Our policies and procedures and systems are effective in preventing errors	73.2
Frequency of events reported	**59.4**
When a mistake is made, but is caught and corrected before affecting the patient, it is reported...	58.2
When a mistake is made, but has no potential to harm the patient, it is reported...	59
When a mistake is made that could harm the patient, but does not, it is reported...	61.1
Supervisor/Manager expectations and actions promoting patient safety	**48.2**
Manager says a good word when he/she sees a job done according to established patient safety procedures	46.5
Manager seriously considers staff suggestions for improving patient safety	47.9
Whenever pressure builds up, my manager wants us to work faster, even if it means taking shortcuts	52.3
My manager overlooks patient safety problems that happen over and over	46.2
Organizational learning and continuous improvement	**56.1**
We are actively doing things to improve patient safety	56.9
Mistakes have led to positive changes here	60.2
After we make changes to improve patient safety, we evaluate their effectiveness	50.5
We are given feedback about changes put into place based on event reports	59.3
We are informed about errors that happen in the unit	53.8
In this unit, we discuss ways to prevent errors from happening again	56.1
Teamwork within units	**57**
People support one another in this facility	60.2
When a lot of work needs to be done quickly, we work together as a team to get the work done	55.8
In facility, people treat each other with respect	55
When one area in this unit gets really busy, others help out	57
Communication openness	**55.3**
Staff will freely speak up if they see something that may negatively affect patient care	53.8
Staff feel free to question the decisions or actions of those with more authority	55.9
Staff are afraid to ask questions when something does not seem right	56.1
Non-punitive response to error	**48.1**
Staff feel like their mistakes are held against them	50.5
When an event is reported, it feels like the person is being written up, not the problem	49.4
Staff worry that mistakes they make are kept in their personnel file	44.5
Staffing	**45.3**
We have enough staff to handle the workload	44.4
Staff in this facility work longer hours than is best for patient care	45.9
We work in 'crisis mode' trying to do too much, too quickly	45.6
Management support for patient safety	**46.1**
Management provides a work climate that promotes patient safety	48.8
The actions of management show that patient safety is a top priority	40.9
Management seems interested in patient safety only after an adverse event happens	47.1
Units work well together to provide the best care for patients	47.9
Teamwork across units	**43.3**
There is good cooperation among units that need to work together	45.1
Units do not coordinate well with each other	44.7
It is often unpleasant to work with staff from other units	39.2
Things 'fall between the cracks' when transferring patients from one unit to another	43.3
Important patient care information is often lost during shift changes	39.5
Problems often occur in the exchange of information across units	48.2

for improvement were "overall perception of security", "Teamwork within units", "Organizational learning/ continuous improvement", "Open communication and "Frequency of events reported". There were no differences between physicians and nurses regarding all dimensions of the patient safety culture (Table 4).

Discussion

The measurement of safety culture and climate in healthcare is still in a relatively immature stage of development as compared to other domains (eg, offshore installations, manufacturing) [25,26]. Measuring of patient safety perception

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Table 4: Comparison of average positive perceptions towards HSOPSC's patient safety culture dimensions between physicians and nurses in Sahloul hospital Sousse (Tunisia)

Composites	Paramedical personnel (n = 234)	Physicians (n = 110)	p-value
Overall perception of safety	57.9%	57.8%	0.93
Frequency of events reported	56.1	61	0.4
Supervisor/Manager expectations and actions promoting patient safety	47.9	48.5	0.98
Organizational learning and continuous improvement	55	57.9	0.69
Teamwork within units	43	43.5	0.88
Communication openness	45.3	45.3	0.98
Non-punitive response to error	50.9	57.3	0.27
Staffing	45.2	49.6	0.47
Management support for patient safety	44.5	47	0.67
Teamwork across units	56.4	55.3	0.88

is the first step of a long process of cultural change and improvement of quality care. The safety culture environment is considered the most important barrier to improving patient care safety [27]. The starting point for developing a safety culture should be the evaluation of the current culture by using an appropriate instrument [21]. Few studies were conducted in Tunisian health facilities. One of them, our study is the first survey on patient safety culture among health professionals of Sahloul Hospital (Sousse, Tunisia).

Overall, we generally found low patient safety culture scores in our hospital. Our results suggested negative perception of the ten dimensions. No significant differences on patient safety culture perception levels between physicians and paramedical staff have been demonstrated. Similar results were reported in Iranian hospitals [28]. Whereas, the professions differed in their perception of patient safety climate in others studies [29-32]. This could be explained by the lack of effective communication and collaboration between physicians and other medical personnel, which has a profound effect on workplace environment and patient care [30]. Our results suggested that the same improvement strategies of patient safety culture are likely to have an impact for both physicians and paramedical staff. Our responses rate (73%) was higher than those reported in several other studies [21,32-34]. They varied from 37% to 63%. The undeveloped dimensions in our study were "Supervisor or manager expectations and actions promoting patient safety", "Hospital management support for patient safety", "Non-punitive response to error", "Staffing" and Teamwork across hospital units which is a similar result as in other studies [20,35]. However, literature has shown different results and a wide variation between countries (Table 5). The differences regarding the perception of patient safety may be explained by the differences in organizational behaviour between cultural settings, organizational commitments, leadership, relationships within organizations and differences in methodologies, tools, populations and social culture. Despite the progress of patient safety assessment that has been made in recent years, there remains a significant patient safety issue that has yet to be formally recognized and systematically addressed, namely, the issue of culture and its possible links to patient safety [36].

The unit level dimension "Teamwork across hospital units" received a lowest percentage positive response in our study. Many safety culture measurement studies reported a negative perception regarding this dimension [14,28,29,33-35,37]. Whereas, it might be developed in Norwegian and Taiwanese hospitals [32,38]. Our respondents are not more likely to cooperate and coordinate with their co-workers. This situation does not allow the development of patient safety in our organization. Teamwork is an important part for the development of patient safety, and personnel should be encouraged and supported in their efforts to establish good relationships with people working in other units [39]. Thus, communication, handoffs and transitions are essential in the care process to ensure quality care. Communication within and across hospital units is critical in a healthcare environment as the patient is usually treated by several healthcare practitioners and specialists in multiple settings [40]. Evidence shows that communication problems are major contributors to adverse events [41]. Moreover, the number of events reported was significantly associated with the composites measuring communication openness, feedback and communication about errors, non-punitive response to error, hospital handoffs and transitions, and teamwork across hospital units [42]. On another hand, the respondents seem unsatisfied regarding Staff recruitment policy. The dimension "Staffing" had low percentage of positive responses, meaning that most of the respondents feel that staff allocation is not adequate to handle patient safety related workload.

Then, it is necessary to consider communication and teamwork as a priority to improve care safety and quality in our organization. We must act on two most implicated factors: workload and insufficient staff numbers [43]. They predispose to stress, anxiety and depression which increase the risk of occurrence of adverse events [44].

"Non punitive response to error" was the third undeveloped dimension in present study as reported by several studies [28,29,33-35,37,38]. Event reporting, an essential component for achieving a learning culture, can only happen in a non-punitive environment where events can be reported without people being blamed [21]. Many errors in health care go unreported for many reasons including fear, humiliation, the presence of a punitive response to error, and the fact that reporting will not usually result in actual change [45]. Paramedical staff cannot speak freely and believe that their mistakes are held against them and later kept in their files [46]. Promoting a blame-free climate is considered a key strategy for improving error-reporting frequency. Developing such a climate is associated with promotion of trust in the organization, and using systems approaches to error identification with focus shifted from individuals to processes [47]. The dimension "Non punitive response to error" showed strongest relationship with "Management Support for Patient Safety" and "Supervisor or manager expectations and actions promoting patient safety",

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Table 5: Cross-countries of average positive perceptions towards HSOPSC's patient safety culture dimensions

Author	Country	Year	A	B	C	D	E	F	G	H	I	J
Haugen [32]	Norway	2010	57	38	68	67	75	75	73	59	35	46
Rockville [37]	USA	2012	66	63	44	62	72	80	58	58	71	72
Chen [38]	Taiwan	2009	65	57	45	58	83	94	72	39	62	84
Robida [35]	Slovenia	2014	58	71	38	59	-	62	41	32	36	64
Bodur [29]	Turkey	2008	56	54	24	59	70	75	62	48	62	66
Arabloo [28]	Iran	2011	60	58	44	53	61	65	53	52	54	62
El-Jardali [33]	Lebanon	2010	72.5	68.2	24.3	57.3	66.4	82.3	56	36.8	78.4	78.3
Al-Ahmadi [34]	Saudi Arabia	2010	59	63	22	60	70	84	50	27	74	87
Bouafia [14]	Tunisia	2012	63.8	68.8	65.2	64.8	68.2	63.3	45.5	55.2	13.9	68.2
Our study	Tunisia	2013	57.8	59.4	48.1	55.3	48.2	57	43.3	45.3	46.1	56.1

A: Overall perception of safety, **B**: Frequency of events reported, **C**: Non-punitive response to error, **D**: Communication openness, **E**: Supervisor/Manager expectations and actions promoting patient safety, **F**: Teamwork within units, **G**: Teamwork across units, **H**: Staffing, **I**: Management support for patient safety, **J**: Organizational learning and continuous improvement

other undeveloped dimensions in our study. This could be partly explained by frustration of nursing staff regarding the loss of trust in hospital administration, listening, recognition of their clinical expertise and taking into account their views on patient safety. This loss of trust stems, in part, from a perception that initiatives in patient care and nursing work redesign have emphasized efficiency over patient safety [30]. Furthermore, management practices are essential to the creation of safety within the organization, and these practices include creating and sustaining trust throughout the organization [48].

In our organization, 56.9% of professionals perceived positively the need to take action to improve patient safety. This is the starting point for the promotion of safety culture. Thus, many recommendations could emerge to improve the quality and safety of care, taking into account our results: (i) Consider improving safety culture as priority, (ii) Place the patient at the centre of the concerns of public authorities, managers and health professionals (iii) Develop a non-punitive culture and encourage reporting of AEs, (iv) Team leaders must play their role as a "model" while promoting the culture of safety through consistent, both relational and organizational behaviours, (v) Promote teamwork and open communication, (vi) elaborate and simplify protocols and checklists and (vii) elaborate and execute a training program annually

This present study has several limits. The quantitative assessment of patient safety culture using a self-administered questionnaire can be associated with a declaration bias. Indeed, self-administered questionnaire may influence the reaction of those who, for fear of reprisal or prosecution, will give social answers that do not reflect reality. However, this bias is more important in quantitative surveys based on interviews [49]. We used the French version of HSOPSC. This version may have measured different patient safety culture's constructs in our sample from those meant by AHRQ [15]. The final structure of the tools does differ. This corroborates the need to adapt the tool to each country according to local ways of being, thinking, behaving and communicating [15]. Furthermore, HSOPSC does not calculate an overall score of patient safety culture. The validation of such score is complex and raises the problem of choosing the dimensions to be considered and their weightings. Finally, this study is carried out in a single hospital, which limits the external validity.

Conclusion

This study was an opportunity to familiarize health professionals with this concept of patient safety and to initiate a reflection on the current level of safety culture and its possible improvement. Our results suggest that the first step to patient safety improvement in our organization should be obtaining the support of hospital management, assuming a non-punitive approach to those who make and report medical errors and considering communication and teamwork.

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